Bandolier 153

Independent evidence-based thinking about health care

On Bertrand Russell

If Bertrand Russell was good for anything, it was for supplying brain dead writers with quotations as an inspiration to keep on writing. For those who doubt this, try a little judicious Googling, and enjoy.

Attributed to Russell is the following: *It is undesirable to believe a proposition when there is no ground whatsoever for supposing it to be true*. So here's just one unbelievable thing to believe before breakfast - that astrological signs are associated with illness. Of course they are not, yet if you get a very large mound of data about a large number of people, you can come up with loads of apparently statistically significant associations.

While this might make you pause for a nanosecond, you know it cannot be true. But it is fertile stuff for examining how to avoid the spurious. A huge Canadian study has done the sums, and found 72 statistical associations, but it had to do over 14,000 calculations to find them! The lesson is that we can be caught out by failing to correct for multiple testing, and that failing to do such corrections is common.

Surveys

Bandolier this month has included some surveys - on what patients want to know about adverse events, on understanding of food labels, and on compulsive buying. Surveys are often given a bad name, dismissed as being just a survey. Concentrating on fine detail can often detract from the message.

Fine detail is not what surveys should be about. They are about headlines. They should knock us in the eye and tell us something we didn't know or hadn't thought about. Our customers (if we can be so bold) tell us that many of them can't understand labels on food, and that almost all of them (at least in Kansas) want much more information on adverse events than we know, know how, or are able to tell them.

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Preventing colorectal adenomas

Bandolier 129 had a quick review of trials of aspirin, coxibs, and NSAIDs to prevent polyp recurrence in familial polyposis or prevention of adenomas. In familial polyposis there was some evidence that coxibs and NSAIDs may prevent polyp recurrence, but trials tended to be small and short. Three trials of low dose aspirin to prevent colorectal adenomas were longer (2.5 to 4 years) and larger (about 2,000 patients in total), and tended to show some reduction in adenoma formation, by about 10%.

We now have results from two [1,2] large and relatively long trials comparing celecoxib at various doses with placebo. What makes these interesting is not only the results on adenoma prevention, and possibly about colorectal cancer prevention, but also what they tell us about adverse events in trials of longer duration than those in arthritis, where duration is often little longer than three months.

Randomised trials

Protocols were similar for both trials. Patients enrolled were aged over 30 years and had undergone colonoscopy within three to six months and had an adenoma of at least 6 mm, or 2-10 adenomas of any size. Polyps were removed before the start of the trial, and all adenomas were confirmed by a central pathologist, with adjudication in case of disagreement between local and central pathologists. Excluded were patients with familial polyposis, hereditary bowel cancers, or various other bowel diseases or surgery, together with sensible medical exclusions. Use of NSAIDs or full dose aspirin was not allowed, and use of analgesics limited.

Trials were both randomised and double blind. In one [1] celecoxib was 400 mg or 800 mg daily in divided doses, and in the other [2] 400 mg once daily. The primary outcome was detection of an adenoma during colonoscopy, with the secondary outcome of advanced adenoma (larger than 10 mm with various histological criteria). Trials were intended to last three years, with colonoscopy at one and three years.

Results

Patients (over 3,500 randomised) were aged about 60 years on average (range 30 to 92 years), were predominantly (90%) white, and male (70%). An average of two adenomas had been reported, about 40% of which were larger than 10 mm. Low dose aspirin use was 30% in one trial [1] and 20% in the other [2]. There was a 10% discontinuation rate in both studies, mainly because of failure to undergo colonoscopy. Both trials were stopped early because of fears over cardio-

vascular adverse events with coxibs, so that they actually lasted about 2.5 years.

Efficacy and adverse event results are in Table 1, where all celecoxib dose regimens are combined for comparison with placebo. Celecoxib reduced the appearance of any adenoma, and advanced adenomas. The cumulative incidence of adenomas detected over three years in the two trials is shown in Figure 1. There were a small number of colorectal cancers (14) detected, with no difference between celecoxib and placebo. The results were not substantially different for aspirin use or non-use, and slightly better for patients who were 80% compliant or more for most of the trial.

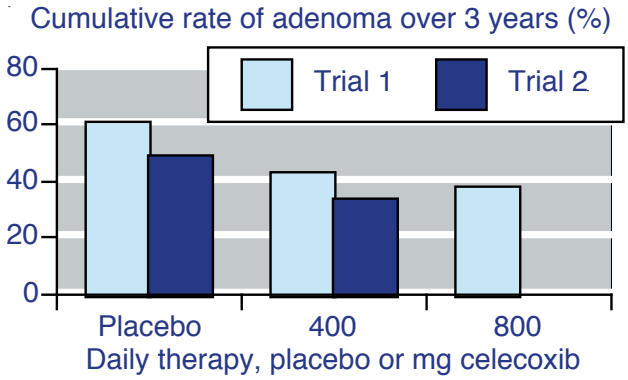
Celecoxib was not associated with any difference from placebo for all-cause mortality or gastrointestinal haemorrhage (nor for anaemia in one trial [2]). There was no difference between celecoxib and placebo for serious adverse events. Celecoxib was associated with higher rates than placebo of renal or hypertensive disorders, investigator reported cardiovascular disorders, and independently adjudicated APTC endpoints (Table 1).

Comment

In many ways the results of these two trials comparing celecoxib with placebo for preventing colorectal adenomas are similar to those using low dose aspirin (Bandolier 129). Aspirin reduced adenomas with an NNTp of about 16, and also had a higher rate of heart attack and stroke compared with placebo. The heart attack and stroke rate with low dose aspirin (1.3%) was the same as the APTC rate with celecoxib in these two trials (1.3%).

These two reports are detailed, especially with regard to adverse event reporting. The increased rates of renal or hypertensive disorders are not unexpected with a coxib or NSAID in the present state of knowledge. The results confirm that celecoxib, with or without low dose aspirin, does not cause gastrointestinal bleeding.

Figure 1: Cumulative rate of ademonas over three years with placebo and celecoxib



There are good reasons why cyclooxygenase inhibition might prevent colorectal cancer. Cyclooxygenase-2 appears to be over-expressed in human cancers, and this seems to be related to poor survival. Inhibition might reduce cell proliferation and angiogenesis, and induce apoptosis. There may be cyclooxygenase independent effects. There is considerable observational evidence that regular aspirin or NSAID-use reduces cancer incidence, particularly colorectal.

Despite this biological plausibility, properly conducted clinical trials might not give the answers we want. These two, and others, have opened an industrial-sized can of worms, in part because they were so good in collecting and reporting adverse events. We are still at the experimental stage when it comes to knowing if or how to use these agents for colorectal cancer prevention.

References:

1 M Bertagnolli et al. Celecoxib for the prevention of sporadic colorectal adenomas. New England Journal of Medicine 2006 355:873-884.

2 N Arber et al. Celecoxib for prevention of colorectal adenomatous polyps. New England Journal of Medicine 2006 355: 885-895.

Table 1: Efficacy and adverse events pooled from two polyp trials of celecoxib and placebo

Outcome	Event rate (%) with Placebo	Event rate (%) with Celecoxib	Relative risk (95% CI)	NNTp/NNH (95% CI)
Efficacy				NNTp
Any adenoma at colonoscopy: year 1	39	24	0.61 (0.55 to 0.68)	6.9 (5.6 to 8.9)
Any adenoma at colonoscopy: year 3	27	18	0.65 (0.55 to 0.77)	11 (7.6 to 19)
Advanced adenoma at colonoscopy: year 1	9.2	3.3	0.35 (0.26 to 0.47)	17 (13 to 25)
Advanced adenoma at colonoscopy: year 3	5.2	3.1	0.57 (0.39 to 0.83)	47 (27 to 220)
Colorectal cancers reported, or on colonoscopy	0.3	0.4	1.44 (0.47 to 4.45)	not calculated
Adverse events				**NNH**
All-cause mortality	1.0	1.3	1.27 (0.66 to 2.45)	not calculated
Adjudicated APTC events	1.5	2.8	1.94 (1.16 to 3.25)	74 (44 to 250)
Investigator-reported cardiovascular disorders	4.6	7.4	1.61 (1.21 to 2.15)	36 (23 to 81)
Gastrointestinal ulceration or haemorrhage	11	12	1.05 (0.87 to 1.27)	not calculated
Renal or hypertensive disorders	17	22	1.24 (1.08 to 1.43)	22 (14 to 56)

NNTp = number needed to treat to prevent an event; NNH = number needed to harm

Astrology, illness, and chance

We depend a lot on statistical testing to tell us what to think about a result, and how much weight to put on it, but often forget that statistics (and chance) are themselves subject to rules. For instance, by setting a 95% confidence limit on "normal" values, we automatically define 5% of the results to be "abnormal". In another example, Bandolier 105 examined the DICE studies. One showed that rolling dice to simulate trials provides 1 in 20 which were statistically significant at the 5% level (statistical significance set at a p value of 0.05), what would be expected by chance even though there was no difference. Another example showed that subgroup analysis of homogeneous data produced results of spurious high statistical significance.

The perils of multiple statistical testing might have been drummed into us during our education, but as researchers we often forget them in the search for "results", especially when such testing confirms our pre-existing biases. A large and thorough examination of multiple statistical tests [1] underscores the problems this can pose.

Study

This population-based retrospective cohort study used linked administrative databases covering 10.7 million Ontario residents aged 18-100 years who were alive and had a birthday in the year 2000. The database was split in two before analysis to provide both derivation and validation cohorts of about 5.3 million persons, so that associations found in one cohort could be confirmed in the other cohort.

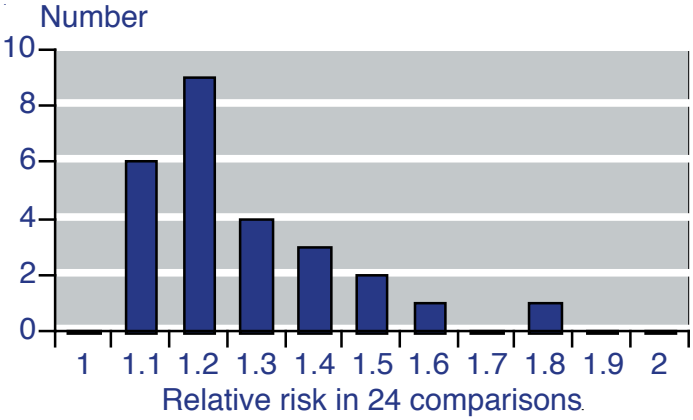
All admissions to Ontario hospitals classified as urgent (but not elective or planned) was used, using DSM criteria, ranked by frequency. This was used to determine which persons were admitted within the 365 days following their birthday in 2000, and the proportion admitted under each astrological sign. The astrological sign with the highest hospital admission rate was then tested statistically against the rate for all 11 other signs combined, using a significance level of 0.05. This was done until two statistically significant diagnoses were identified for each astrological sign.

Results

In all 223 diagnoses (accounting for 92% of all urgent admissions) were examined to find two statistically significant results for each astrological sign. Of these 223, 72 (32%) were statistically significant for at least one sign compared with all the others combined. The extremes were Scorpio with two significant results, and Taurus with 10, with significance levels of 0.0003 to 0.048.

The two most frequent diagnoses for each sign were used to select 24 significant associations in the derivation cohort. These included, for instance, intestinal obstructions and anaemia for people with the astrological sign of Cancer, and head and neck symptoms and fracture of the humerus for Sagittarius. Levels of statistical significance ranged from 0.0006 to 0.048, and relative risk from 1.1 to 1.8 (Figure 1), with most being modest.

Figure 1: Relative risk of associations between astrological sign and illness for the 24 chosen associations, using a statistical significance of 0.05, uncorrected for multiple comparisons



Protection against spurious statistical significance from multiple comparisons was tested in several ways.

1 When the 24 associations were tested in the validation cohort, only two remained significant, gastrointestinal haemorrhage and Leo (relative risk 1.2), and fractured humerus and Sagittarius (relative risk 1.4).
2 Preserving an overall error rate of 5% meant using a significance level of 0.002, which would have left 9 of 24 comparisons significant in the derivation cohort, but none in the both derivation and validation cohort.
3 Correcting for the 14,718 comparisons used in the derivation cohort would have meant using a significance level of 0.000003, and no comparison would have been significant.

Comment

This study is a sobering reminder that statistical significance can mislead when we don't use statistics properly: don't blame statistics or statisticians, blame our use of them. There is no biological plausibility for a relationship between astrological sign and illness, yet many could be found in this huge data set when using standard levels of statistical significance without thinking about the problem of multiple comparisons. Even using a derivation and validation set did not offer complete protection against spurious results in enormous data sets.

Multiple subgroup analyses are common in published articles in our journals, usually without any adjustment for multiple testing. The authors examined 131 randomised trials published in top journals in six months in 2004, and found an average of 5 subgroup analyses, and 27 significance tests for efficacy and safety per trial. The danger is that we may react to results that may have spurious statistical significance, especially when the size of the effect is not large.

Reference:

1 PC Austin et al. Testing multiple statistical hypotheses resulted in spurious associations: a study of astrological signs and health. Journal of Clinical Epidemiology 2006 59:964-969.

What patients want to know about adverse events

A reader asked the very pertinent question about what information patients wanted about adverse events of treatment. This is one of those perennial questions for which the answer varies from nothing to everything. A quick search indicated an important paper Bandolier had managed to overlook [1]. It is important because it asked a lot of patients, and because the answer is very clear.

Study

The population was a convenience sample of adults aged 18 years or older attending outpatients clinics, accompanying family, medical students or non-professional employees. Over two weeks individuals in these categories were approached in outpatients and asked to participate in completing a questionnaire. The questionnaire had a number of questions, about demographics, about what patients wanted to know about adverse events of treatment, and how they wanted their doctors to behave in terms of informing patients about adverse events (which were always called side effects in the questionnaire).

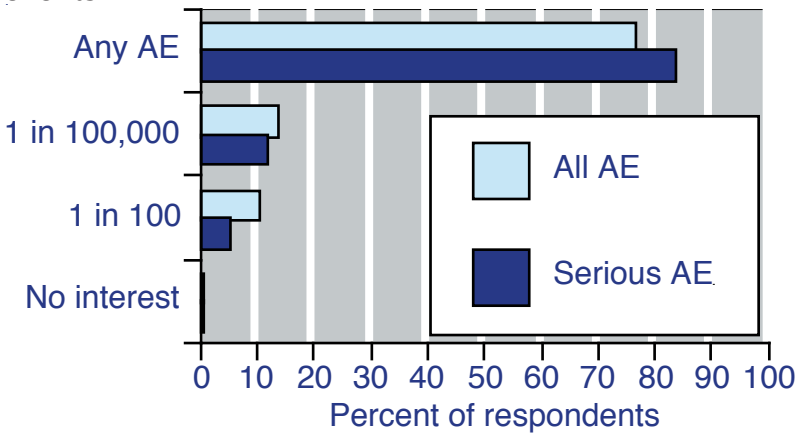
Results

Of 2,500 individuals approached, 2,348 (94%) agreed to participate. These were mostly women (61%), and the mean age was 47 years, with a good spread between younger and older age groups, though only 17% were aged over 65 years. These participants had a mean of 14 years of education.

Desire for information

Two questions asked patients to select one answer that reflected their opinion about the information they would want about adverse events of medication. The first of these was preceded by a statement that some adverse events were common, and some rare, but a response was required for **all** adverse events. The second was preceded by a statement that some adverse events were mild, but some were serious (defined as causing prolonged discomfort, disability, or death), but a response was required for **serious** adverse events.

Figure 1: What patients want to know about adverse events



For both the choices were as follows:

1 I want to hear of any side effects from the doctor no matter how rare.
2 I want to be told if a side effect has occurred in 1 in 100,000 patients.
3 I want to hear if a side effect has occurred in 1 in 100 patients.
4 I am not interested in being informed as to side effects.

The results for this question are shown in Figure 1. Over 90% of patients answered that they wanted to know about adverse events (all or serious) even if they occurred in as few as 1 in 100,000 people.

Doctors' behaviour

Another two questions asked about the behaviour expected of doctors. Overwhelmingly (68%) respondents wanted doctors to give the same information to all their patients rather than using their judgement by withholding information from some. When asked whether doctors were ever justified in withholding information about adverse events, 73% considered that they were not.

Comment

We might choose to ignore these results because they come from Kansas, but it is worth reflecting that this study is not only large, but is probably the only such study we have. It is absolutely clear, that patients want to know about adverse events, and they expect their doctors to level with them. There is considerable analysis of differences between ages or education levels, but these are small compared with the clarity of the answer.

There is a bit of a problem, as most readers will have spotted. First, that adverse event information of the required quantity and quality is simply not available for many medicines. Second, that given the large number of adverse events that occur with any medicines, the average GP consultation will need to be expanded from 10 minutes to an hour or more. Third, as any readers of Bandolier will know, we simply haven't a clue as to how best to convey information about risk in ways that patients will understand.

Ho hum. As Chairman Mao once said (or says he said), the longest journey starts with a single step. And it will be a long journey, because what patients think they know now is miles from reality. A survey of 100 patients admitted on acute medical on call in Dublin [2] indicated that they considered NSAIDs and PPIs to be equally the safest of drugs.

References:

1 DK Ziegler et al. How much information about adverse events of medication do patients want from physicians? Archives of Internal Medicine 2001 161:706-713.
2 G Cullen et al. Patients' knowledge of adverse reactions to current medications. British Journal of Clinical Pharmacology 2006 62:232-236.

Shoes and arthritis

Exercise and weight loss can improve pain from knee arthritis, but little attention has been paid to the design of shoes to help knee pain. When it comes to training shoes, rather than ordinary shoes or slippers, we transcend the ordinary. A few moments cursory examination of the shelves of a sports shoe shop or department will reveal huge variations in design and technology.

Some of these are reputed to be particularly useful for patients with pain from knee arthritis. One such is made by a company called Masai Barefoot Technology (MBT), and is unstable, which means that it demands increased muscle activity in the lower legs, especially on standing. Repute is one thing, proof is another. A randomised trial of shoes for knee arthritis [1] is interesting.

Randomised trial

The trial, in Canada, recruited residents of Calgary over the age of 40 years with symptoms of knee osteoarthritis. The sample size was based on an ability to demonstrate a 10 mm difference on a visual analogue scale of pain on walking. Arthritis was documented clinically and radiologically, was of at least six months' duration, and with initial pain intensity on walking of at least 30 mm on a 100 mm scale (moderate pain). Participants had to be on their feet for two to three hours a day. There were various obvious exclusions, including changes in therapy.

Participants were randomised using a computer generated sequence to MBT shoes or high-end walking shoes (New Balance 756 WB), properly fitted. Both groups were given instructions about training, and to gradually increase the duration of use of the shoe over three or four days. Thereafter, the shoes were to be used as much as possible.

Western Ontario and McMaster Universities osteoarthritis indices were measured initially, and at three-week intervals over 12 weeks.

Results

The 123 participants had an average age of 58 years, with slightly more women than men, and an average BMI of 30 kg/sq metre.

Both shoes improved pain, stiffness, physical functioning, and total WOMAC score by similar percentages (Figure 1). For most measures, absolute percentage benefits were of the order of 10%. Most of the benefits on pain occurred quite early on in the 12 weeks of the trial, mostly within the first three or six weeks. Both shoes also significantly increased some measures of knee strength, but by no means all of them.

There were differences between the shoes in their effect on balance. Performance in the static test time with eyes closed increased significantly by seven seconds between baseline and 12 weeks with MBT shoes, but not New Balance shoes, though there was no difference between groups with different shoes after 12 weeks.

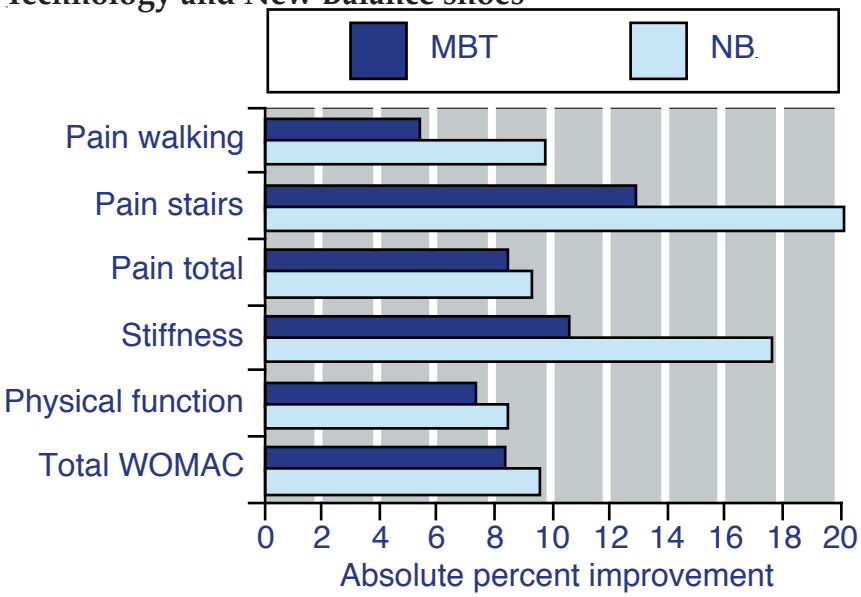
Comment

In Bandolier's young days, training shoes consisted of black canvas uppers and flat rubber soles, and were called daps. Today, the profusion of sports and walking shoes is amazing. Those who have not used a good walking shoe will be amazed at the difference a good shoe can make, in both feel and attitude to walking as an exercise.

What we have in this trial is a very good result. Perhaps not for a particular shoe, but certainly for patients with knee arthritis. The magnitude of the average reductions in pain are useful, and indicate that there were probably some very good improvements for individuals. Moreover, adverse events from shoes are unlikely.

Choosing a good shoe might be added to the other things that people with knee osteoarthritis can do for themselves, alongside exercise, losing weight, glucosamine sulphate, avocado-soybean unsaponifiables, and topical NSAIDs, (at least in Europe). All of these put off the day when they need to see a doctor, to the benefit of both doctor and patient.

Figure 1: Percentage reduction for several scores between baseline and 12 weeks in patient scores for Masai Barefoot Technology and New Balance shoes



The number of good clinical trials examining good quality walking shoes on pain in knee arthritis is few. This was the only randomised study Bandolier could find. This is a shame, because the implication is that using a good shoe early on might have more beneficial effects. Who, though, will fund the necessary research?

Reference:

1 BM Nigg et al. Unstable shoe construction and reduction of pain in osteoarthritis patients. Medicine & Science in Sports & Exercise 2006 38:1701-1708.

Compulsive buying

Bandolier is relatively minimalist when it comes to shopping. Groceries, obviously. Books, certainly. But for the rest, shopping is a necessity, and definitely not a pleasure. Yet shopping is clearly a pleasure to many people, and for some, like other behaviours, it is a behaviour taken to extreme. Compulsive buying is now becoming a "condition" to be medicalised, and even has a posh name, oniomania. We now have an estimate of its prevalence [1].

Prevalence study

Prevalence was studied using a random telephone survey of 2,500 US adults that addressed buying attitudes and behaviours, collecting additional information about demography and financial consequences. Participants were found by a random telephone interviewing system using the first person aged 18 years or older who answered the telephone. Up to 15 calls were made to each number answered in the continental USA, using a structured interview.

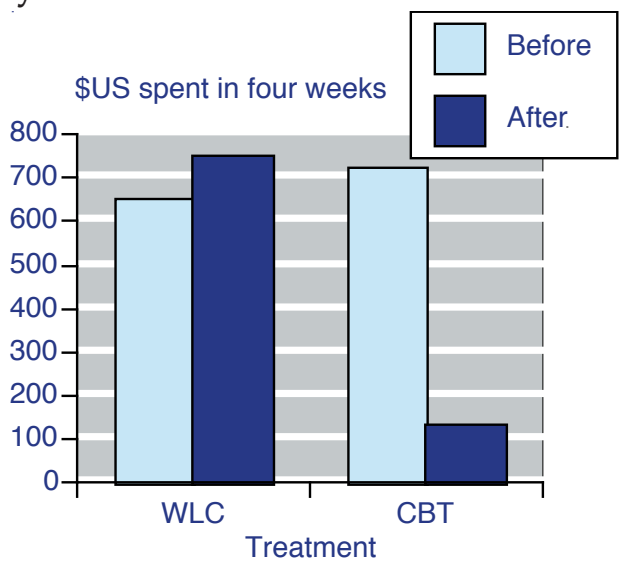
Questions included a compulsive buying scale with seven items, reflecting a need to spend money, awareness that the need to spend money is aberrant, a loss of control over spending, buying to improve mood, and the probable financial problems that could ensue. Cutoff scores used were two and three standard deviations below the general population mean.

Results

The study sample was different from the US population as a whole, having more women, being slightly older, and with slightly more married people. Overall prevalence of compulsive buying was 5.8% using a cutoff of two standard deviations, and 1.4% using three standard deviations. The results were generally similar for men and women, and when corrected for an average US adult population.

Those defined as compulsive buyers (either criterion) were significantly more likely to purchase items because it made them happy (Figure 1), because items were on sale, but they didn't care what they bought, were unsure why they bought things, and felt depressed after shopping. Most were close to their credit card limits, and 60% made the minimum payment each month, compared with 13% of other respondents. Compulsive buyers were more likely to have lower incomes, defined as incomes below US$50,000 per annum.

Figure 2: Effect of cognitive behavioural therapy on buying in a small, non-randomised pilot study



Comment

Any analysis looking for people outside a set number of standard deviations from the mean (any mean) is going to find some who are, and the proportions here of 5.8% and 1.4% for those outside two and three standard deviations is more or less to be expected. But these folk, with lower incomes, had more debt on their cards and paid back less. It sort of fits, both internally, and with what most of us know from acquaintances or the media.

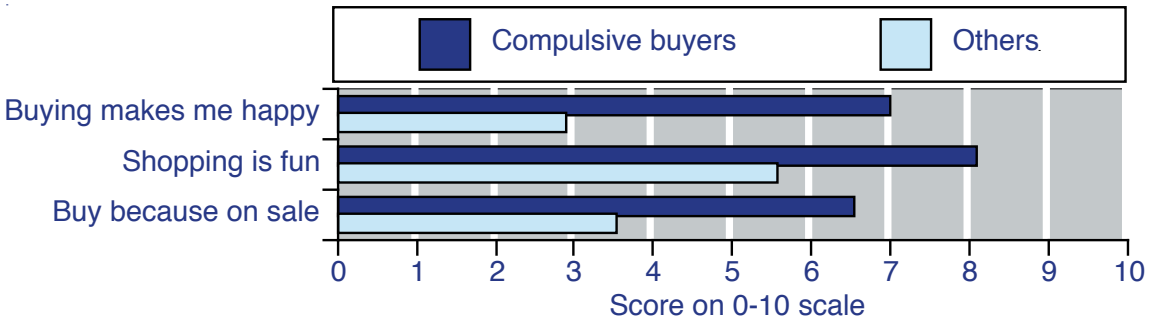
Is it a medical problem, though? Well, some attempts have been made to treat compulsive buying, primarily with antidepressants. Case series suggest some positive results, and a few randomised trials have been negative. Psychotherapy similarly has been positive in case series and one pilot non-randomised comparative study [2] of cognitive behavioural therapy compared (CBT) with waiting list controls (WLC; Figure 2). It makes for an interesting dilemma for purchasers of healthcare, who might want to avoid compulsion.

References:

1 LM Koran et al. Estimated prevalence of compulsive buying behavior in the United States. American Journal of Psychiatry 2006 163:1806-1812.

2 JE Mitchell et al. Cognitive behavioural therapy for compulsive buying disorder. Behaviour Research and Therapy 2006 44:1859-1865.

Figure 1: Responses to attitudes on shopping by 134 compulsive buyers and 2,162 other respondents



Aromatase inhibitors in advanced breast cancer

Bandolier is dimly aware of the difficulties of evaluating cancer treatments. New treatments are usually evaluated against best current treatment, a moving target that can make trials difficult, and a coherent picture from overviews almost impossible. Cancer treatments differ from early after diagnosis to when the disease is more advanced. Then there is the difficult issue of outcomes, with survival as the hardest to measure, though not necessarily always the most important; getting good survival data means long trials, and results are neither quick nor easily come by.

Looking at cancer, then, is a bit of a minefield. But when a new meta-analysis of aromatase inhibitors in breast cancer swims into our ken [1], it deserves that at least we stir the neurone to try and understand what it says.

Systematic review

Randomised trials were eligible if they compared an aromatase inhibitor or inactivator with tamoxifen or progestagens (like medroxyprogesterone acetate) in patients with advanced breast cancer, defined as metastatic and inoperable locally advanced or recurrent breast adenocarcinoma. Any line of treatment was considered, whether first line or second or subsequent line in patients who had received such therapy in the past. Excluded were trials in earlier stages or with other histological types of cancer.

Data were analysed according to the generation of the agent: first (aminoglutethimide), second (formestate, fadrazole), and third (anastrazole, examestane, letrazole, vorozole) versus standard hormonal treatment. Also analysed were third generations versus tamoxifen as first line and progestogens as second or subsequent lines of treatment.

Results

Twenty-three trials with survival data for 8,500 women were eligible for the meta-analysis, published between 1982 and 2004; 11 were double blind, and nine investigated treatment as first line therapy. Trial size varied between 40 and about 800 patients. The typical median age of women in the trials was about 65 years.

Only third generation aromatase inhibitors and inactivators demonstrated any significant survival benefit compared with standard hormonal treatment (Table 1).

In cumulative meta-analysis, statistical significance only occurred in 2000, and remained subsequently, coinciding with the addition of the third generation aromatase inhibitors. Only four individual trials showed statistical significance on their own, and three of these were third generation aromatase inhibitors.

The survival benefit for third generation agents was similar in both first line treatment compared with tamoxifen and second or subsequent line versus progestogens (Table 1).

Comment

This meta-analysis shows a small but significant benefit of third generation aromatase inhibitors (anastrazole, examestane, letrazole, vorozole) over standard hormonal treatment in advanced breast cancer. It also shows them to have a benefit over tamoxifen and progestogens, and it is of sufficient importance to be considered when making decisions about care pathways in breast cancer. It might well change some of them.

It exemplifies the need for meta-analysis when trials are relatively small (average size of 360 patients in these trials), when the outcome of the trial is survival, when there are relatively few deaths because of relatively short duration of trials (median survival was typically two years or more), and when differences between groups was relatively small (10-15% reduction with third generation aromatase inhibitors).

For a theoretical median survival of 20 months with standard treatment with standard hormone therapy, change to or addition of third generation aromatase inhibitor would confer an additional four months or so of life. By such small steps are improvements in cancer treatment achieved.

Reference:

1 D Mauri et al. Survival with aromatase inhibitors and inactivators versus standard hormonal therapy in advanced breast cancer: meta-analysis. Journal of the National Cancer Institute 2006 98:1285-1291.

Table 1: Comparisons of different generations and line of use of aromatase inhibitors, and the relative hazard for mortality in breast cancer trials

Comparison	Number of comparisons	Relative hazard (95%CI)
Generation (vs standard hormone treatment)		
First	6	0.96 (0.84 to 1.09)
Second	7	1.00 (0.89 to 1.13)
Third	12	0.87 (0.82 to 0.93)
Comparator (aromatase inhibitor as..)		
First line vs tamoxifen	4	0.89 (0.80 to 0.99)
Second line vs progestagens	8	0.86 (0.79 to 0.84)

Patient understanding of food labels

To many of us, information about healthy living is fairly straightforward. Don't smoke, exercise, eat fruit and vegetables, have fish in our diet, avoid too much salt, and drink alcohol in moderation. Many people eat processed or convenience foods, which are often higher in fats, salt, and sugar. It seems easier to avoid them than to try and work out from the labels how much fibre, fat, sugar, and calories they contain. A survey indicates that a substantial minority have significant difficulty in doing this [1].

Survey

The survey was carried out in Baltimore, using a convenience sample of 200 patients aged 18 to 80 years recruited from an academic primary care clinic. Those with poor vision, mental problems, or who could not speak English were excluded.

Patients completed a questionnaire on demographics and nutritional behaviour, validated health literacy and mathematics measures, and a nutritional survey. Questions on the survey used actual food labels, and included questions about determining carbohydrate or calorie content of an amount of food or beverage.

Results

Two hundred patients completed the survey. Most (72%) were women, and their average age was 43 years. They had a spread of education and family income, and most used food labels at least weekly.

On average, 69% of the food label questions were answered correctly. The most common mistakes concerned incorrect serving sizes, incorrect calculations, and confusion from extraneous information on the label. As an example, 68% could not correctly determine the number of calories in drinking a bottle of soda with contained 2.5 servings. Greater comprehension was correlated with higher income and education, and greater literacy and numeracy skills.

Comment

Many of us will not be surprised by this result, which probably applies just as much to the population at large as to an outpatient population. It emphasises that even people with higher literacy and numeracy skills have problems with food labels. Healthy living is more difficult for people with lower education, and lower income. Providing better and more understandable information is probably just as important on packaged food and drink as for medicines. Literacy and numeracy skills should be taken into account

Reference:

1 RL Rothman et al. Patient understanding of food labels. Role of literacy and numeracy. American Journal of Preventive Medicine 2006 31:391-398.

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Book review

Blood of the Isles. Brian Sykes. Bantam Press, London, 2006. pp 306. £11.99. ISBN 0-593-05653-1.

Bandolier, being of a certain age, well remembers the time when a choice had to be made, between Arts on the one side and Sciences on the other. That was the way it was then, torn between the siren call of history and the compelling demands on modernity. What tipped the balance was a book that told the story of the discovery of the structure of DNA – the Double Helix, by Francis Crick and James Watson. Just as interesting were other newly emerging disciplines; biochemistry for instance, the story of how organic life worked. Anyone could read history: you needed the new knowledge to read the genes.

What goes around comes around. Now it is the genes that are re-writing history, and telling us more than archaeology or the study of ancient texts ever could. It is the new discipline of genetic archaeology that Brian Sykes records, specifically the genetic archaeology of those of us who live in, or have come from, the British Isles.

We are each different from one another in many ways, culturally and genetically. Sykes, though, tells the story of the boring bits of DNA: the useless 400 base pairs in the 17,000 or so that make up mitochondrial DNA that we get only from our mothers, and the outwardly unremarkable sequence of bases TAGA that trips up the copying mechanism of the Y-chromosome. From specific changes in these we learn of our maternal and (for men) paternal genetic history.

Sykes and his team have conducted a genetic survey of the British Isles. His book examines the legends and history of the Isles, and relates it to the evidence from genetic archaeology. If you want to know the answer, this review isn't going to tell you. Just buy the book and read it for yourself: it will probably surprise, but then read Francis Pryor's books, Britain BC, and Britain AD to fill some of the gaps from more muddy archaeology, when more of it comes together.

The surprising thing is how readable this book is. Bandolier devoured it in one go on holiday in Spain, a serendipitous happenstance. Just like the story of the discovery of the structure of DNA, Sykes' book could well be a milestone. There are many reasons to read it, science and history being only two. Get it for any thinking youngster. Genetic archaeology has real importance in how we think about ourselves, and others.